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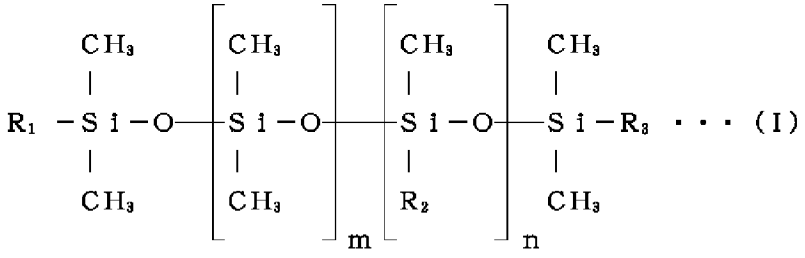
[Claim(s)]

[Claim 1] The deodorization polyester fiber structure excellent in the wash endurance which is the fiber structure which mainly consists of polyester fiber, and is characterized by giving the deodorizer to this polyester fiber through the binder resin which has a siloxane bond.

[Claim 2] The deodorization polyester fiber structure which excelled [deodorizer] in the wash endurance according to claim 1 which is the oxide or compound oxide of at least one sort of elements chosen from the group of Zn, Si, Ti, Fe, aluminum, and Zr.

[Claim 3] The deodorization polyester fiber structure which excelled [binder resin / which has a siloxane bond] in the wash endurance according to claim 1 which is the compound expressed with the following general formula (I).

[Formula 1]



The integer of 5-1,200 and n m among [general formula (I) The integer of 1-50, R1, R2, and R3 At least one sort of arbitrary organic groups chosen from the group of a hydrogen atom, a methyl group, an ethyl group, an amino group, an epoxy group, the carboxyl group, the Calvi Knoll machine, and the methacrylic machine, respectively are shown.]

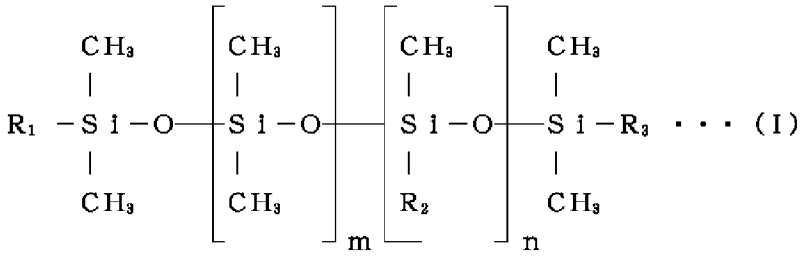
[Detailed Description of the Invention]

[0001]

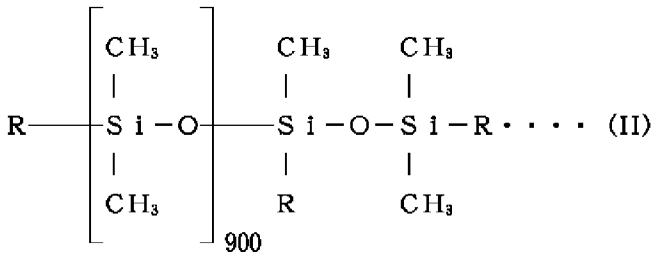
[Field of the Invention] This invention relates to the deodorization polyester fiber structure excellent in the wash endurance which has the outstanding deodorization nature and ****** for using it for the field as which high wash endurance, such as a uniform, sportswear, and a sheet, is required still in detail about the deodorization polyester fiber structure excellent in wash endurance.

[0002]
[Description of the Prior Art] Man's concern about a smell is increasing very much with the diversification of a living environment which aimed at the comfortable life. Set the fiber materials which make the main ingredients the thermoplastic high molecular compound which has fiber organization potency under the purpose of removing a bad smell with a fiber structure, and the adsorbent which adsorbs a bad smell to what carries out fusion silk thread spun (JP,H2-157040,A), and post-processing. The things (JP,H7-216751,A etc.) which give a deodorizer through a polyurethane system resin constituent are developed.
[0003] However, since the heat stability of a deodorizer and particle diameter pose a problem in a silk-thread-spun process although endurance is acquired if it is in the method of carrying out the fusion silk thread spun of the fiber materials which make the main ingredients the thermoplastic polymer which has the aforementioned fiber organization potency, and a deodorizer, there is no flexibility in selection of a deodorizer. Although there is flexibility of a deodorizer on the other hand, in order that the adhesiveness of polyurethane resin or polyester resin, and a material fiber may be weak, may produce a problem in endurance and may raise endurance in the deodorant finish by post-processing It is very difficult to apply to the field of which ****** will become hard if the amount of binders is increased, therefore high washing resistance, such as a uniform and sportswear, is required.
[0004]
[Problem(s) to be Solved by the Invention] The purpose of this invention solves the above-mentioned problem, and there is in offering the deodorization polyester fiber structure excellent in the wash endurance which has the outstanding deodorization nature and ****** for using it for the field as which high wash endurance is required.
[0005]
[Means for Solving the Problem] This invention is a fiber structure by which fiber composition is carried out mainly from polyester, and is the deodorization polyester fiber structure excellent in the wash endurance characterized by giving the deodorizer into this structure through the binder resin which has a siloxane bond.
[0006]
[Embodiment of the Invention] carrying out terephthalic acid to polyester as used in the field of this invention with a main dicarboxylic acid ingredient -- at least one sort of glycols -- preferably It is polyester which uses as a main glycol ingredient at least one sort of alkylene glycol chosen from ethylene glycol, trimethylene glycol, a tetramethylen glycol, etc. In the above-mentioned polyester, the 3rd ingredient may denature with copolymerization and/or a blend if needed.
[0007] In addition, this polyester does not interfere, even if arbitrary additive agents, for example, a catalyst, a color protection agent, a heat-resistant agent, fire retardant, an antioxidant, inorganic particulates, etc. are contained if needed. In this invention, with a fiber structure, a line of thread, cotton, a rope, textiles, knitting, A nonwoven fabric etc. is said, and even if synthetic fibers other than regenerated fiber, such as natural fibers, such as cotton and wool, rayon, and acetate, and polyester fiber are used for this fiber structure by the volume mixed spinning, combined weaving, and on ** etc. in addition to polyester fiber, it does not interfere. A deer is carried out and the polyester fiber manufactured from said polyester as a composition fiber of the above-mentioned fiber structure is used

for the fiber structure which mainly consists of polyester fiber in this invention.
[0008] It is possible to use it, even if it is polyester fiber which carried out alkali loss in quantity as polyester fiber which constitutes the fiber structure of this invention, and since the contact surface product of a binder and polyester fiber can be increased, doing in this way is desirable.
[0009] As a deodorizer used in this invention, there is no restriction in particular and any deodorizer of an inorganic system, an organic system, and a product of nature can be used. the oxide or compound oxide of at least one sort of elements thermally chosen from the group of stable Zn and stable Si, Ti, Fe, aluminum, and Zr especially -- more preferably It is a compound oxide and especially the deodorizer of the inorganic system whose BET specific surface areas are more than 100m2 / g, and the average particle diameter of 5 micrometers or less is desirable. As an example of the above-mentioned deodorizer, 105 m<SUP>2 /g and average-particle-diameter [of 1 micrometer]] is mentioned for the product made from compound oxide [Yamato Chemistry of Si:Zn=50:50, brand names "ZAOBA tuck PSB", and BET specific surface area, for example.
[0010] The quantity of the deodorizer used by this invention is 1 to 3 weight % especially preferably 0.5 to 5weight % still more preferably 0.5 to 10weight % preferably to a fiber structure. At less than 0.5 weight %, odor eliminating is not discovered, and on the other hand, if it exceeds 10 weight %, the endurance of a deodorization operation will fall.
[0011] It is desirable that the binder resin which has the siloxane bond used by this invention is resin which means the compound which has a siloxane bond (Si-O-Si) as a frame, and is expressed with the following type general formula (I).
[0012]
[Formula 2]



[0013] The integer of 5-1,200 and n m among the above-mentioned general formula (I) The integer of 1-50, R1, R2, and R3, respectively A hydrogen atom, a methyl group, an ethyl group, an amino group, Can select from at least one sort of organic groups chosen from the group of an epoxy group, the carboxyl group, the Calvi Knoll machine (-CH2 OH), and the methacrylic machine (-CH=CMeCOOH) arbitrarily, and [with that] Contact nature with material polyester foundation cloth, ******, etc. are controllable. As an example of a binder of having the above-mentioned siloxane bond, the dimethylsiloxane compound expressed with the following formula (II) is mentioned.
[0014]
[Formula 3]



[0015] R expresses a methyl group or a hydrogen atom among the above-mentioned [general formula (II).]
[0016] Moreover, it is also possible to control ******, adhesiveness, the degree of solidity, etc. by making the binder resin which has a siloxane bond as shown in the above-mentioned general formula (I) intermingled in polyurethane resin and the Pori acrylic resin with copolymerization and/or a blend.
[0017] [these deodorizers and the binder resin which has a siloxane bond] Cheb Than, acetone, methyl ethyl ketone, methyl isobutyl ketone, Dissolve in organic solvents, such as ethyl acetate, butyl acetate, mineral turpentine, and isopropyl alcohol, and processing liquid is prepared. Whether self-emulsification is carried out as it is by using it, a suitable emulsifier, For example, it is used, emulsifying by the sulfate ester salt of higher alcohol, alkyl bezel sulfonic acid salt, a higher alcohol polyoxyalkylene addition, a higher-fatty-acid polyoxyalkylene addition, and higher-fatty-acid sorbitan ester.
[0018] the combination rate (bulk density) of the above-mentioned deodorizer and the binder resin which has a siloxane bond -- desirable -- 0.5 / 1 - 10/1 -- it is 2 / 1 - 5/2 still more preferably. By less than 0.5/1, since a deodorizer will be covered with a binder, odor eliminating is not discovered, and if 10/1 is exceeded, on the other hand, the endurance of a deodorization operation will fall.
[0019] processing in this invention -- unprocessed cotton, thread, and woven knitted goods -- it can carry out also in which stage. About the processing method, the immersing method, the pad dry method, the spray method, a coating method, the laminating method, etc. can be performed by any method, and can be suitably chosen according to the kind of the form of a fiber structure, resin, and solution. Moreover, the adhesion state of a deodorizer over polyester fiber is usually suitably fixed after giving a deodorizer and binder resin to a fiber structure by heat-treating about 1 to 120 minutes at normal temperature -180 degree C.
[0020]
[Example] A work example explains this invention still more concretely hereafter. In addition, especially % in a work example and a comparative example is a weight standard unless it refuses, and evaluation of physical properties depended on the following measuring methods.
The initial concentration of the deodorization nature bad smell ingredient was set up with ammonia 200ppm and 20 ppm of hydrogen sulfide, the bad smell ingredient residual concentration in a container was measured with the detecting tube in amount [of 2g/l.] of samples, 3l. of total amount, and measuring time 60 minutes, and the deodorization rate was computed.
[0021] Endurance wash of deodorization nature JIS It carried out by the same method as the above-mentioned evaluation using the sample after washing 100 times according to

the method of L-1018.
[0022] Foundation cloth for uniforms of 100% of work-example 1 usual polyester fiber (100g/m2 of metsukes) It used, padding processing was carried out by the water dispersion containing silicone resin [product [made from Shin-etsu Silicone] and KM2002L-1]2.0%, and deodorizer [product [made from Yamato Chemistry] and ZAOBA tuck PSB] 2.0%, and it dried for 3 minutes at 130 degrees C, and processed for 1 minute at 180 degrees C. Deodorization nature was evaluated about ammonia and hydrogen sulfide using this textile.
[0023] Silicone urethane copolymerization resin [Dai-Ichi Kogyo Seiyaku Co., Ltd. make and Hellas TRON KS-18] 2.0% was used instead of 2.0% of silicone resin using the same textile as work-example 2 work example 1, and also the same processing as a work example 1 was performed, and deodorization nature was evaluated.
[0024] Silicone acrylics copolymerization resin [Nissin Chemical make and SHARINU FE-230] 2.0% was used instead of 2.0% of silicone resin using the same textile as work-example 3 work example 1, and also the same processing as a work example 1 was performed, and deodorization nature was evaluated.
[0025] The product made from polyurethane resin [Yamato Chemistry and U-30]2.0% were used instead of 2.0% of silicone resin using the same textile as comparative example 1 work example 1, and also the same processing as a work example 1 was performed, and deodorization nature was evaluated.
[0026] Pori acrylic resin [Dainippon Ink & Chemicals, Inc. make and 865]2.0% of BONKOTO AN were used instead of 2.0% of silicone resin using the same textile as comparative example 2 work example 1, and also the same processing as a work example 1 was performed, and deodorization nature was evaluated.
[0027] It evaluated using the same textile as comparative example 3 work example 1, without performing deodorization nature. (Blank examination) These evaluation results are shown in Table 1.
[0028]
[Table 1]

		実施例			比較例		
		1	2	3	1	2	3
バインダー（各２％）		シリコーン樹脂	シリコーン－ウレタン共重合樹脂	シリコーン－アクリル共重合樹脂	ポリウレタン樹脂	ポリアクリル樹脂	未加工
消臭剤濃度（％）		2.0	2.0	2.0	2.0	2.0	-
消臭率	アンモニア（％）						
	消臭性	98	94	97	95	96	48
	耐久性	98	88	84	56	62	-
	硫化水素（％）						
	消臭性	100	100	100	100	98	12
	耐久性	100	100	98	34	65	-
風合い		○	○	○	△	×	○

[0029]
[Effect of the Invention] In giving a deodorizer to the fiber structure which mainly consists of polyester according to this invention, a deodorizer is given through the binder resin which has a siloxane bond. Since the wash endurance of the deodorization polyester fiber structure finally obtained improves by leaps and bounds by the outstanding perviousness over the polyester fiber structure and deodorizer of binder resin which exist and have this siloxane bond, and adhesiveness, It is useful for especially the use as which high endurance, such as a uniform, sportswear, and a sheet, is required.

[Translation done.]